

Name _____ Date _____ Period _____

Expand the binomial using Pascal's Triangle or a calculator to find the binomial coefficients.

1. $(a+b)^4$

2. $(x+y)^7$

Evaluate the expression by hand (using the formula) before checking your answer on a grapher. Show work!

3. $\binom{10}{7}$

4. $\binom{8}{5}$

5. $\binom{9}{2}$

6. $\binom{166}{166}$

Find the coefficient of the given term in the binomial expansion.

7. $x^{11}y^3$ term, $(x+y)^{14}$

8. x^4 term, $(x-2)^{12}$

9. x^6y^2 term, $(x+y)^8$

10. x^3 term, $(x-3)^7$

Use the Binomial Theorem to expand each expression.

11. $(x-2)^5$

12. $(2x-1)^7$

13. $(2x+y)^4$

14. $(\sqrt{x}-\sqrt{y})^6$

15. $(x^{-2}+3)^5$

Factor

16. $9m^2 + 6mn + n^2$

17. $125x^3 + 27y^3$

18. $x^2 + 6xy + 8y^2$

Simplify

19. $\frac{x}{x-1} + \frac{3x-2}{x+2}$

20. $\frac{x}{x-3} \cdot \frac{x-5}{x^3-6x^2+5x}$

21. $\frac{x}{x^2-x-12} - \frac{3}{x^2+5x+6}$